ESS Engineering Services & Supplies Pty Ltd
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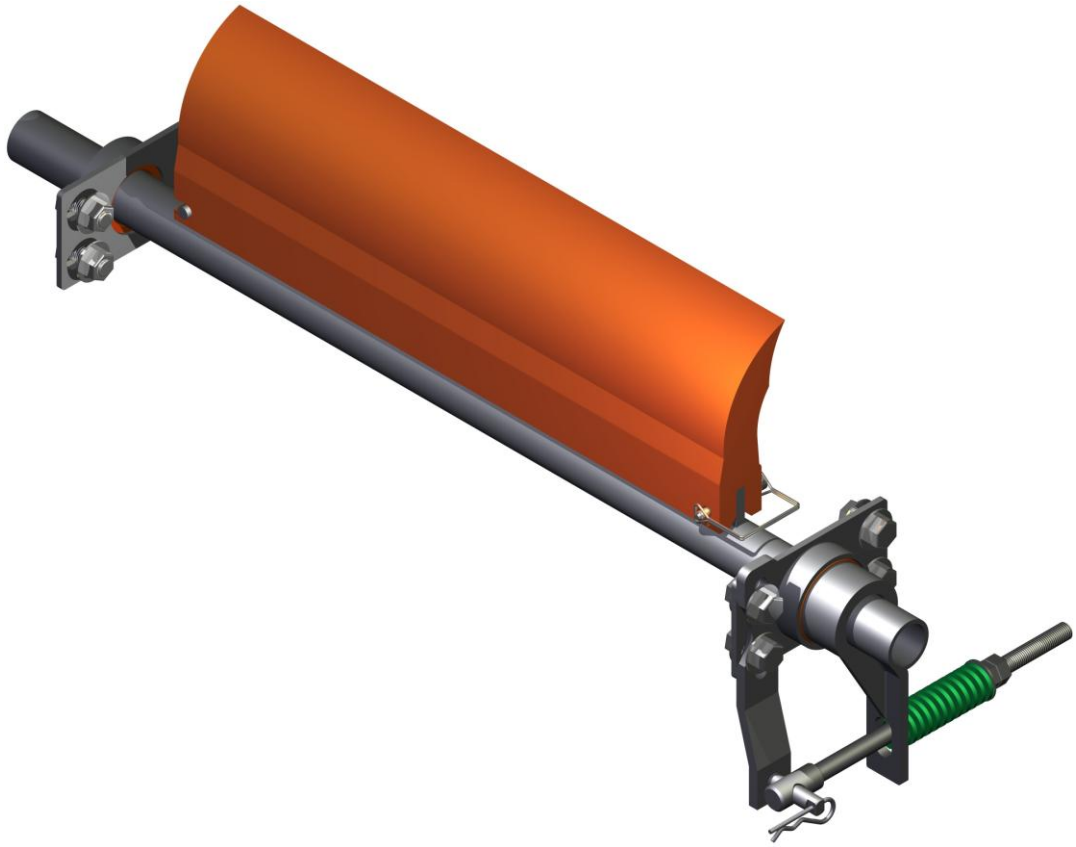
PIT VIPER™
CONVEYOR BELT PRIMARY CLEANER



SAFE WORKING PROCEDURES (SWP)
INSTALLATION MANUAL

MARTIN ENGINEERING

Revision	Description of Change	Changed By	Date
A	First Issue	TT	31/3/09
B	CR 2430, dimension correction, update graphics	TT	3/4/09
C	Updated Melbourne Address & Removed SA Address	SH	3/08/09
D	Final Checklist Updated Items 4 & 5 Reversed	SH	15/04/10
E	Revised Drawing F0347 - revision D	KO	14/03/11

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WARRANTY NOTE

ESS WARRANTS the **PIT VIPER Primary Cleaner** to be free of defects both in materials and workmanship for a period of 12 months from the date of despatch of the product from the **ESS** factory. The warranty given by **ESS** in this regard will extend only to replacing or repairing product shown to be defective.

The warranty also is subject to the following restrictions:

(a) Installation of the product contrary to the instructions contained in the supplied manual will void such warranty absolutely;

(b) The warranty will not extend to any liability for injuries incurred and which result from the use of the product contrary to the instructions in the manual;

(c) Save as prescribed by law, **ESS** will not be liable for any damage sustained by a purchaser or a third party by way of consequential loss arising out of defects in the product.

You are asked to note that **ESS** offers purchasers a service whereby either:

(a) **ESS** will install the product and certify the correctness of such installation, or

(b) **ESS** WILL certify the correctness or otherwise of the installation of the product by third parties.

This certification service is designed to ensure that you obtain the full benefit of the **ESS** warranty hereby provided. If you would like to take advantage of the installation certification service provided, please contact **ESS** regarding the service.

THE CONTENTS OF THIS MANUAL ARE COPYRIGHT TO:

***ESS* ENGINEERING SERVICES AND SUPPLIES PTY LTD**
ALL RIGHTS RESERVED

Information contained herein is for use in the operation of the PIT VIPER PRIMARY CLEANER, purchased from ***ESS*** and cannot be passed on to any other party without express permission, in writing, from ***ESS***.

Visit the ESS Website www.esseng.com.au to register your warranty.

SECTION 1 – SAFETY

All equipment installed on or around a conveyor belt must comply with AS 1755 – 2000 Conveyors – Safety requirements.

Ensure that only suitably qualified and trained personnel install and service this product, and that all site and statutory safety procedures are followed.

The **PIT VIPER PRIMARY CLEANER** is designed to be quickly and easily serviced by appropriate personnel, however under no circumstances should any personnel attempt installation or service of this equipment whilst the conveyor belt is running.

The conveyor belt drive and any associated equipment must be shut down and locked out according to plant safety procedures before attempting work requiring access to or opening of the chute or conveyor enclosure.

Contact with a moving conveyor belt and its drive components can result in serious injury or death.

The **PIT VIPER** Cleaner may be inspected or the tension adjusted with the belt running as long as suitable visual access is available, but the service person should never reach into or enter the conveyor enclosure. No other service work is able to be carried out with the conveyor running. Shut down and lock out the conveyor for any work requiring any part of the body to enter the conveyor enclosure, or be exposed to moving components.

The following hazards that may be present when installing this equipment:

	Hazard		**Hazard**
X	Moving Conveyor - ISOLATE		Other:
	Hot Work		Other:
	Working at Heights		Other:
	Heavy Lift		Other:
	Persons Working Overhead		Other:
	Persons Working Below		Other:
	Electrical & Cabling		Other:
	Pinch Points		Other:
	Trip Hazards		

Once hazards have been identified, the installer should undertake and document a comprehensive Job Hazard Analysis according to site requirements and good safe-working practice.
The installer must identify all hazards and apply appropriate controls before proceeding with the installation or servicing of this equipment.

SECTION 2 – INTRODUCTION

The **PIT VIPER** is a conveyor belt primary cleaner.

It is normally mounted on the face of the conveyor belt head pulley and is designed to peel off the thick layer of loosely adhering material that often accounts for up to 80% of carryback.

The **PIT VIPER** Primary is normally used in conjunction with at least one secondary cleaner, such as the Inline Premium Secondary Cleaner, and often with a water spraying system.

The one piece blade is made of cast urethane, with an aluminium extrusion insert for locating to the cleaner mainframe. The blade is secured to the mainframe with one fixed and one removable pin. Blade replacement is quick and easy.

Important Points to Remember Concerning the **PIT VIPER** Primary are;

1. The cleaner is directional - it will only clean the belt travelling in the design direction. However, the cleaner will not be damaged or affected by belt direction reversal.

2. The cleaner is suitable for use on crowned head pulleys and damaged or grooved belts. The urethane blades quickly conform to the belt profile.

3. For slow moving belts, the cleaner should be positioned lower on the head pulley to ensure the blades are clear of the main material flow.

SECTION 3 - PREPARATION FOR INSTALLATION

1. CHECK INSTALLATION DRAWINGS - Ensure that you have the correct drawings and equipment for your conveyor(s).

2. PRE-ASSEMBLE THE CLEANER(S) AND MOUNTS - Do this in your workshop or similar free area, rather than at the Conveyor. This will enable you to:

- verify all required equipment is present
- familiarise yourself with the cleaner assembly
- allow you to plan the installation, reducing installation time.

3. ASSEMBLE THE NECESSARY TOOLS & SAFETY EQUIPMENT REQUIRED FOR THE INSTALLATION

4. OBSERVE THE CONVEYOR WHILE RUNNING AND CONVEYING MATERIAL -

- Observe the material trajectory
- Observe the belt direction - does it reverse or roll back?
- Observe the belt splice condition
- Does the belt run true, or track off to one side?
- Is the Head Pulley out-of-round?

Consult ***ESS*** if any **UNUSUAL** conditions are observed in the above. These conditions may result in recommendation of a different installation position or even a different cleaner.

SECTION 4 - INSTALLATION

DANGER! Conveyor must be shut down and locked out before any installation or service work is performed.

WARNING! If installation is to be done in an enclosed area, test atmosphere for gas level or dust content. Follow all welding and safety guidelines and Safe Working Procedures.

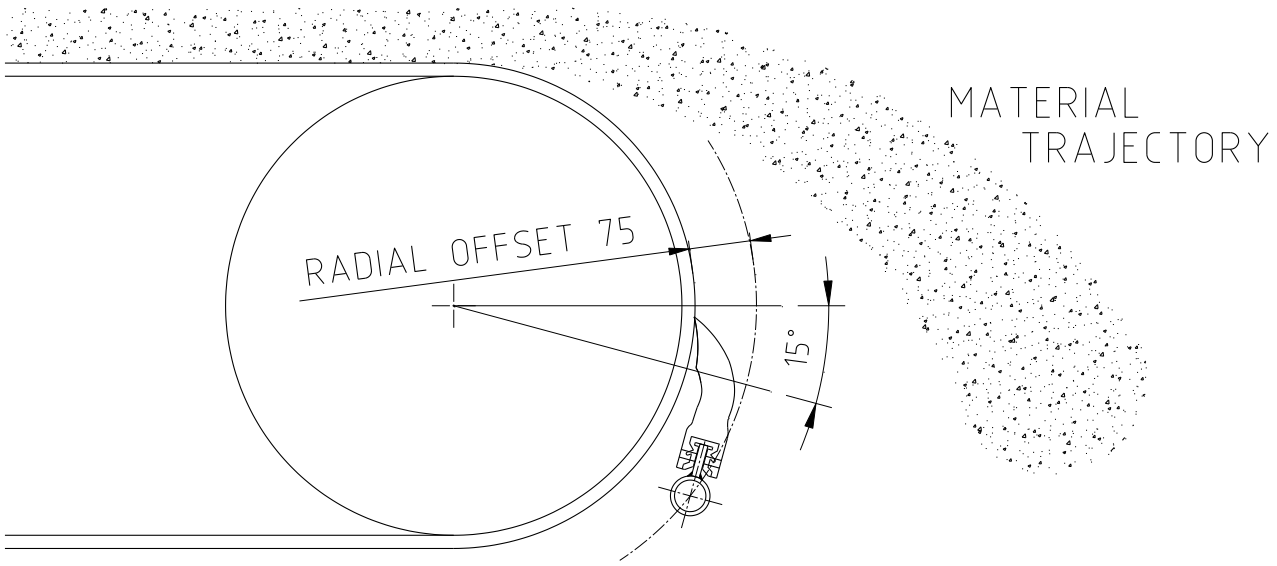
NOTE 1 For original equipment installation, where cleaner cutouts and brackets have been fabricated into the chute during construction, ignore steps 1 and 2 .

NOTE 2 For installation on enclosed head pulley chutework, draw all dimension lines on chute wall. In applications where head pulley is not enclosed, custom designed brackets are necessary to ensure correct cleaner position. Contact ESS for details of standard brackets available or to assist in design of special brackets.

Step 1. Locating Mainframe Centreline

Using the typical installation drawing supplied in this manual, locate the mainframe's centreline on both sides of the conveyor. Measure radially 75mm from the face of the belt. From this point draw an arc using the pulley's centreline as the centre point. The centreline of the mainframe can be located anywhere along the radius as long as the blade does not lie in the material's trajectory. The optimum position is for the blade tip to be between 0° and 15° below the horizontal centreline.

NOTE: Material trajectory is defined as the path of the material being discharged from the belt.



Verify Mainframe Position before Proceeding

Position the mount and tensioner assembly over the centreline marks for the mainframe. Verify that the mounts fit, and that adequate room is available to tension the cleaner. If used, position the CYA door frame to ensure it fits. If mounts, tensioner or door frame interfere with structural members, it may be necessary to locate the cleaner elsewhere on the 75mm offset radius. If the tensioner only interferes, remember that the tensioner can be reverse assembled, or that the mount and tensioner assembly may be rotated about the cleaner centre line.

The side of the chute from which inspections, adjustments and servicing will be carried out will be referred to as the **Operator Side**. The opposite side of the chute will be referred to as the **Far Side**, and will only require access (other than at installation) on large belts where an optional second tensioner assembly may be added for more uniform application of tensioning force.

Step2. At the selected mainframe mounting positions, mark out and cut the mainframe and mount fastener holes (if required) in each side of the chute. Refer to the installation drawing at the back of this manual.

If a CYA door is to be installed, use the door frame as a template to mark the door cut-out on the operator side. Proceed to cut the door hole, but ensure that the marked centre lines of the cleaner are not totally removed - you will need these to position the mainframe. Fit the CYA door frame over the cutout and tack weld in position.

If a stand-off bracket is to be bolted over a CYA door, the mounting holes also need to be cut or drilled.

Step 3. The Pit Viper Mainframe is a fabricated member comprising a length of DN40 steel pipe, with a steel flat bar for attachment of the blade. On wider belts, an additional flat bar stiffener is added.

Remove the blade from the mainframe. Do this by removing the lock pin, then sliding the blade clear of the fixed pin at the opposite end. The blade will then come free of the mainframe.

Insert the mainframe without the blade through the mount or CYA door cutout in the operator side of the chute and continue until the far end of the mainframe passes through the far side mount cutout. Ensure that the removable pin end of the mainframe is toward the operator side of the chute. Be careful not to lose the lanyard and lock pin from the mainframe.

Step 4 Slide the operator and far side mounts on to the mainframe ends, then clamp or loosely bolt the mounts to the chute walls. If a stand-off bracket is to be used over a CYA door, and the cutout has been made, fit the operator side mount to the appropriate stand-off bracket, and clamp or bolt the stand-off bracket in the desired position.

Position the mainframe so that the blade mounting flat bar is centred on the belt.

Step 5. Check the position of the mainframe.

- Is the centre line of the mainframe positioned 75mm from the belt face?
- Is the mainframe level, or equal to the pulley shaft?

Fit the blade to the mainframe by locating it on the flat bar, then sliding until the far end of the blade engages on the fixed pin. Fit the removable pin to the operator end of the blade / flat bar interface. Rotate the mainframe until the blade contacts the belt.

- Does the blade tip touch evenly across the belt?

For crowned head pulleys, ensure that the outside ends of the blade are an equal distance from the belt, whilst the centre of the blade is touching. Again, these gaps will quickly close on tensioning.

If any questions above have been answered "NO", take appropriate action to correct the installation. If all questions are answered "YES", proceed.

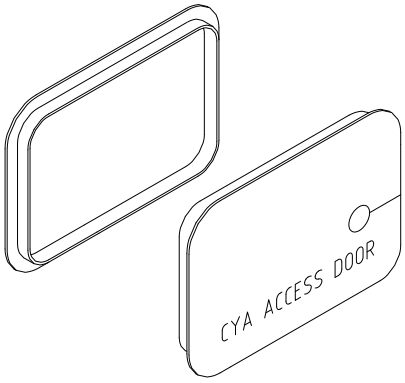
Step 6. Securely bolt the cleaner mounts, brackets and weld the CYA door frame to the chute wall. If not already done, fit the tensioner assembly(ies) to the mount(s).

Centre the blade to the head pulley (or the belt if it is correctly tracked). All ***ESS*** cleaners are designed to clean an area narrower than the actual belt width. This is to allow for a small amount of lateral movement of the belt and to protect the edge of the belt from possible damage.

Lateral movement of the mainframe is prevented by the tensioner's locking hub and a lock collar on the far side mount. Where optional dual tensioners are used, the tensioner locking hubs only are used. Lock these items in position, allowing about 1-2mm of end float in the cleaner mainframe.

Step 7. **WHERE A CYA DOOR IS FITTED.**

Measure the position of the mainframe in relation to the CYA door frame. Mark this position on the CYA door rubber cover, and cut a neat hole, approximately 50mm diameter in the cover. Cut a straight line from this hole to the nearest edge of the rubber cover. Install the rubber cover over the mainframe pipe, and push into place on the door frame. Anchor the loose end of the cover lanyard.



SECTION 5 - SPRING TENSIONER

The ***ESS*** PIT VIPER Primary Cleaner is mounted to the conveyor structure via ***ESS*** Flex Mounts. The Flex Mount is a steel mount plate with a urethane bush. Other bush materials are available for special applications. The Spring Tensioner unit attaches to the existing mount bolts.

The **Spring Tensioner** is a simple, robust and reliable blade tensioning unit. It can be assembled to tension in either the clockwise or anti-clockwise direction and has multiple mounting positions for each direction.

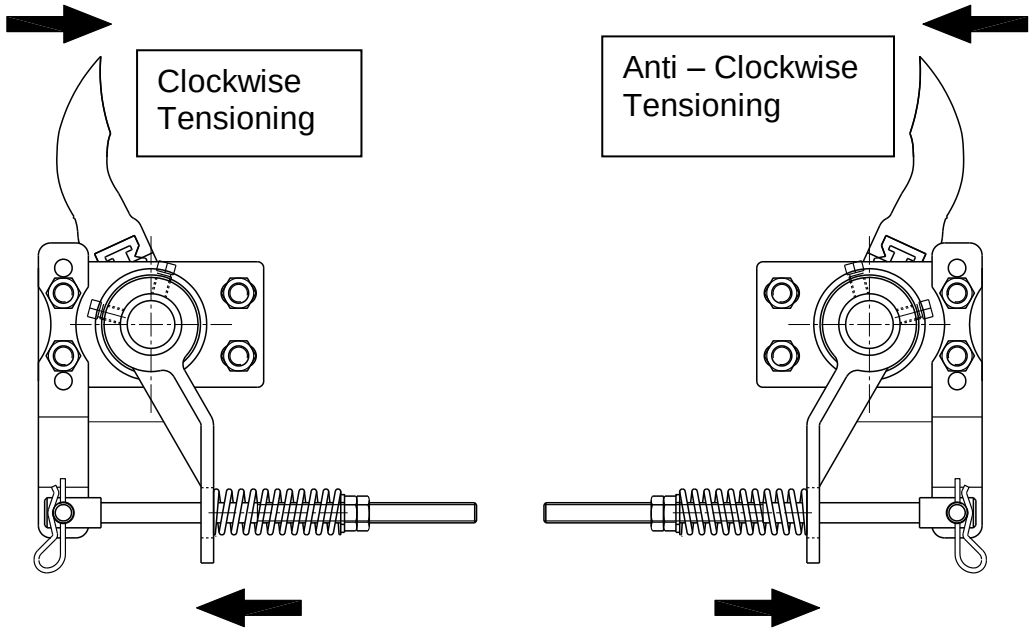
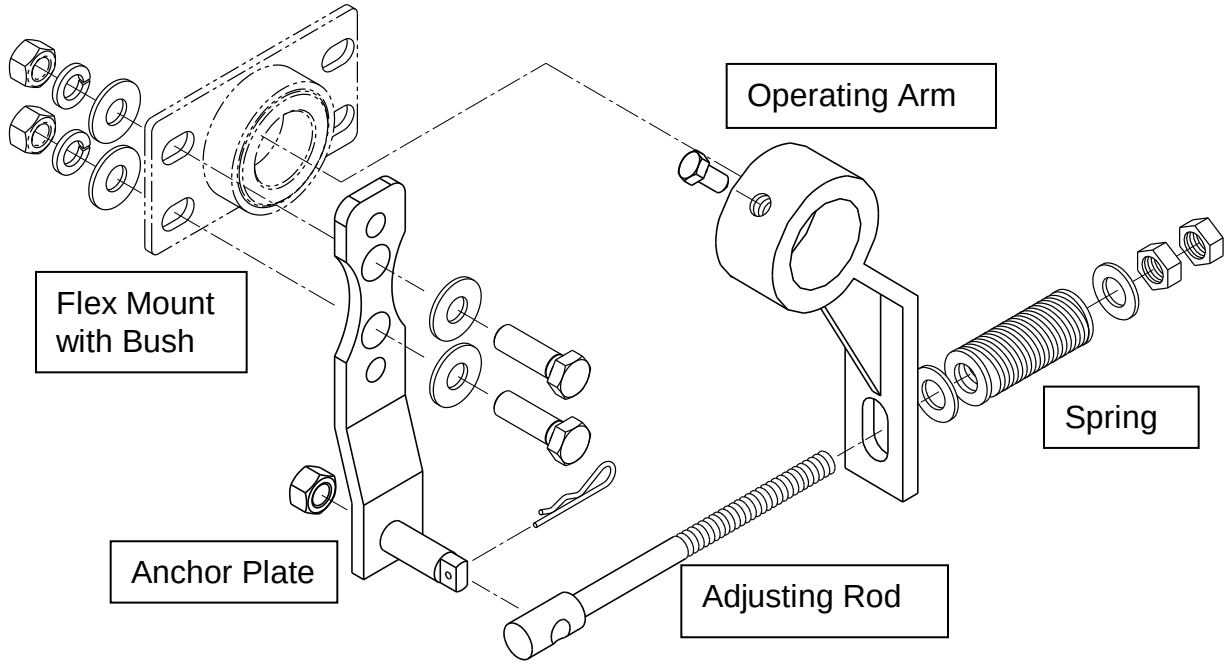


Figure 1

5.1 INSTALLATION OF THE SPRING TENSIONER



Step 1

Fit the anchor plate to the mount using two of the existing M16 mount bolts. Ensure that the plate is in the correct orientation for the desired tensioning direction. The anchor plate can be installed on the opposite side mount holes for tensioning in the opposite direction. The anchor plate and tensioner assembly can also be turned upwards to suit site restrictions.

Step 2

Slide the operating arm onto the cleaner mainframe, again ensuring that it is in the correct orientation for the desired tensioning direction.

Step 3

Insert the threaded end of the adjusting rod through the operating arm slot, with the clevis end toward the anchor plate.

Step 4

Fit the adjusting rod clevis onto the anchor plate pin and secure with clip provided.

Step 5

Fit spring, washer, nut and locknut to the threaded end of the adjusting rod. Only run the adjusting nut a few turns onto the adjusting rod. Do not try to adjust or compress the spring yet.

Step 6

Using a pipe wrench or similar, grip the mainframe and rotate the cleaner until the blade tip is lightly touching the belt. With the operating arm fully retracted against the spring, lock the operating arm onto the cleaner mainframe by tightening the two lock screws. Ensure that the operating arm hub is 1-2mm clear of the mount to allow free rotation without excessive lateral movement of the mainframe.

Step 7

Whilst still supporting the cleaner with the pipe wrench, adjust the nut (not locknut) against the spring until the spring just begins to compress. Release the pipe wrench.

Step 8

For cleaners fitted with optional dual tensioners, repeat above procedure for other side. For cleaners with one tensioner only, fit the locking collar onto the far end of the cleaner mainframe, again locking it into position 1-2mm clear of the mount.

SECTION 6 – SPRING TENSIONER ADJUSTMENT PROCEDURE

Note: The Spring Tensioner is mounted externally to the conveyor chute, and as such is normally able to be adjusted with the conveyor in service. Under no circumstances should any person reach into or enter a conveyor enclosure while the belt is running. For any conveyor belt cleaner service, maintenance or adjustment that requires entry to the conveyor enclosure by any part of the body, first ensure that the conveyor is shut down and locked out to site safety procedures.

Warning: Contact with moving conveyor components can result in severe injury or death.

To adjust the Pit Viper Spring Tensioner:

- Loosen the locknut away from the adjusting nut on the adjusting rod.
- Turn the adjusting nut until the cleaner blade is pressed against the belt, and the spring begins to compress.
- Continue until the spring is compressed to the length shown in the following table 1.
- Once the correct spring compression is achieved, run the locknut up against the adjusting nut, and use two wrenches to tighten the nuts together.
- For cleaners with optional dual tensioners, repeat this procedure on the opposite side.

Table 1

Belt Width	Spring Length
450	95
500	95
600	92
750	92
900	89
1050	89
1200	86
1350	83
1500	80 (92 **)
1800	77 (89**)

** Note: For Cleaners with optional dual tensioners. The settings shown are for each tensioner.

SECTION 7 – PIT VIPER AND SPRING TENSIONER MAINTENANCE PROCEDURES

- **Warning: The following procedures may only be performed on a conveyor that is shut down and locked out to site safety procedures.**
- **Contact with a moving conveyor or its components can result in serious injury or death.**

5.1 Resetting the Spring Tensioner

The Spring Tensioner can occasionally run out of adjustment before the cleaner blade is fully worn. In this case, the tensioner can be reset to the adjustment start point in the following way:

- Shut down and lock out the conveyor.
- For optional dual tensioner cleaners, perform this procedure one side at a time.
- Release the lock nut and run it fully out.
- Gradually release the adjusting nut. In some cases the cleaner will slowly de-adjust with the nut, and in others it may stick, then drop suddenly. **Keep fingers clear.**
- When the adjusting nut is fully retracted, grip the cleaner mainframe with a pipe wrench, and release the lock screws in the operating arm.
- Rotate the cleaner mainframe so that the blade tip lightly touches the belt and hold it in this position. By hand, fully retract the operating arm against the spring and adjusting nut.
- Re-tighten the lock screws in the operating arm.
- Release the pipe wrench from the mainframe and follow the adjustment procedure in the previous section.
- For cleaners with optional dual tensioners, this procedure is even easier. The opposite side tensioner will hold the cleaner in position, so the use of a pipe wrench is not necessary, but the procedure should be carried out on both sides before retensioning to equalise the tensioner positions.

5.2 Blade Replacement

- Shut down and lock out the conveyor.
- Release the locknut and run it fully out (both sides for a dual tensioner cleaner).
- Gradually release the adjusting nut (both sides for dual tensioners). In some cases the cleaner will slowly de-adjust with the nut, and in others it may stick, then drop suddenly. **Keep fingers clear.**
- Remove the cleaner blade. Remove the lock pin and withdraw the blade from the mainframe.
- Fit the new cleaner blade. If the tensioner prevents the new blade from fitting to the belt, reset the tensioner by reversing the procedure described above. Slide the new blade onto the mainframe until it engages the fixed pin. Refit the lock pin.
- Adjust the tensioner(s) as described in the previous section.
- Return the conveyor to service.

SECTION 8 - COMMISSIONING

Step 1. RE-CHECK ALL INSTALLATION DIMENSIONS AND SETTINGS

Double check the items in previous sections - safety - preparation - installation.

Step 2. IS THE BELT EMPTY?

Make sure there are no foreign objects such as tools or clean-up debris left on the belt. They may damage the belt cleaners or clog up the conveyor systems.

Step 3. PLACE CONVEYED PRODUCT ON THE BELT

Place some material on the belt before starting up system. This helps to quickly "Wear in" the blades and reduce the initial friction between the belt and the blades. Handfuls of conveyed material spaced along the belt will do. The belt may also be moistened with water.

Step 4. START THE CONVEYOR

Follow the established safety rules.

Step 5. OBSERVE THE CLEANING ACTION

Observe the belt and the action of the cleaner. Place material on the belt. Look for uniform blade contact on the belt. Run for 5 minutes to get a good idea of the action and the effect of the splices on the belt cleaner.

Step 6. DEMONSTRATE THE SYSTEM TO THE OPERATING SUPERVISORS AND CREW

Call the supervisors responsible for maintenance and operation to the site. Make a short run of the system, putting material on the belt. Show the operator how to adjust and operate the system.

Step 7. SECURE THE SYSTEM FOR PRODUCTION

Follow plant procedure to secure the conveyor for actual production.

SECTION 9 - OPERATOR TRAINING

The decision to purchase ***ESS*** cleaning equipment has put within easy reach the reality of a clean plant. The last step is the correct training of personnel to maintain and service the equipment or employ ***ESS*** on a contract basis to maintain the cleaners so that they remain at optimum efficiency.

The benefits of efficient cleaners outweigh the cost of maintaining the cleaners many times.

If you wish to have your cleaning system maintained on a regular contract basis, contact ***ESS***. If not, train your own personnel as follows:

1. Adhere to all local safety rules.

2. Give a “Hands On” instruction with the conveyor system shut down.

3. Give a “Hands On” instruction with the conveyor system running.

4. All service must be recorded and given to a person of responsibility.

5. Encourage the person being trained to look for possible problems developing on the system, eg. belt tracking excessively, tears or damage to belt, seized idlers, missing bolts, etc.

   A warning to the maintenance department to rectify small problems can save the company a lot of money in repairs and production costs.

6. Impress how important it is to maintain and service the cleaners correctly.

SECTION 10 - TROUBLE SHOOTING

PROBLEM - Blade folds through on start-up.

CAUSE	SOLUTION
Incorrect angle of attack /. installation dimensions	Relocate mounts so that the shaft is 75mm radial from the belt face on the head pulley
Excessive tension	Relax blade tension to maximum tension recommended in installation instructions
Belt running dry	Always place material on the belt for start-up or a little water if material is unavailable
Poor belt condition	Repair belt, dress spices to smooth contour

PROBLEM - Mainframe bent.

CAUSE	SOLUTION
Mainframe undersized	Stiffened mainframe required. Contact ***ESS*** for assistance
Excessive tension	Relax blade tension to maximum tension recommended in installation instructions
Blades folded through	See above
Material build-up between blades/ mainframe and belt	Increase frequency of inspection and service once a week
Normal deflection	A small amount of deflection is considered normal. Contact ***ESS*** if excessive deflection occurs

PROBLEM - Higher blade wear rate than estimated.

CAUSE	SOLUTION
Cleaner over-tensioned	Tension cleaner enough to clean the belt only
Incorrect blade material	Contact ***ESS*** for re-appraisal

PROBLEM - Insufficient cleaning - too much carryback.

CAUSE	SOLUTION
Cleaner under-tensioned	Re-tension cleaner
Build-up on blade	Rap blades against belt. Increase service frequency
Cleaner overloaded	Add additional secondary cleaner
Secondary cleaner not functioning correctly	Service the secondary cleaner

F0347

DO NOT SCALE. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED. REMOVE ALL BURRS AND SHARP CORNERS

ESS BELT CLEANER QUICK REFERENCE

XHD PRIMARY

BELT WIDTH	450	600	750	900	1050	1200	1350	1500	1600	1800	2000	2200	2400
TRACK LENGTH	500	650	800	950	1100	1250	1400	1550	1700	1850	2000	2150	2300
No. BLADES	2	3	4	5	6	6	7	8	9	10	11	12	13
BLADE COVER	330	495	660	825	990	990	1155	1320	1485	1650	1815	1980	2145
FRAME LENGTH	1250	1400	1600	1800	1950	2100	2300	2450	2600	2800	3000	3300	3600
STIFFENER LENGTH	-	-	-	-	-	-	-	1600	1800	1950	2150	2400	2600

TRAC MOUNT PRIMARY

BELT WIDTH	450	600	750	900	1050	1200	1350	1500	1600	1800	2000	2200	2400
TRACK LENGTH	475	600	725	850	1100	1225	1475	1600	1830	1955	2205	2330	2500
No. BLADES	3	4	5	6	7	8	10	11	12	13	15	16	18
BLADE COVER	375	500	625	750	875	1000	1250	1375	1500	1625	1875	2000	2250
FRAME LENGTH	1250	1400	1600	1800	1950	2100	2300	2450	2600	2800	3000	3300	3600
STIFFENER LENGTH	-	-	-	-	-	1375	1625	1750	COMPLETE DATASHEET				

DURT TRACKER

BELT WIDTH	450	600	750	900	1050	1200	1350	1500	1600	1800	2000	2200	2400
TRACK LENGTH	450	600	750	900	1100	1250	1450	1650	1800	2000	2250	2450	2700
No. BLADES	2	3	4	5	6	7	8	9	9(10)	11	12	13	14
PRIM. BLADE COVER	304	456	608	760	912	1064	1216	1368	1368(1520)	1672	1824	1976	2128
SEC. BLADE COVER	317	469	621	773	925	1077	1229	1381	1381(1533)	1685	1837	1989	2141
FRAME LENGTH	1200	1350	1500	1650	1800	2300	2450	2600	2700	2900	3100	3300	3500
STIFFENER LENGTH	-	-	-	-	-	-	-	-	-	COMPLETE DATASHEET			

HAWG BONE / DURT HAWG

BELT WIDTH	450	600	750	900	1050	1200	1350	1500	1600	1800	2000	2200	2400
No. BLADES	2	3	4	5	6	7	8	9	9(10)	11	12	13	14
H/B COVER	317	469	621	773	925	1077	1229	1381	1381(1533)	1685	1837	1989	2141
D/H COVER	355	507	659	811	963	1115	1267	1419	1419(1571)	1723	1875	2027	2179
FRAME LENGTH	1250	1400	1600	1800	1950	2100	2300	2450	2600	2800	3000	3300	3600
STIFFENER LENGTH	-	-	-	-	-	1350	1550	1700	COMPLETE DATASHEET				

RBC

BELT WIDTH	600	750	900	1050	1200	1350	1500/1600	1800	2000	2200	2400
BLADE LENGTH	188	328	468	518	608	748	888	1028	1168	1308	1448
No. HOLES	1	2	3	3	4	5	6	7	8	9	10
PIPE LENGTH	1150	1300	1500	1700	1950	2100	2500	2700	3000	3000	3000
PIPE SIZE	40NB	40NB	40NB	40NB	40NB	40NB	50NB	50NB	50NB	50NB	50NB
BLADE COVER	710	910	1105	1175	1270	1500	1700	1900	2095	2295	2490

HEAVY DUTY RBC

BELT WIDTH	900	1050	1200	1350	1500	1600	1800	2000	2200	2400	2500
BLADE LENGTH	445	550	445	550	657	730	872	1013	1155	1296	1367
No. HOLES	2	2	2	2	3	3	4	5	5	6	6
PIPE LENGTH	1500	1700	1950	2100	2500	2500	2700	3000	3300	3600	3600
PIPE SIZE	65NB	65NB	65NB	65NB	65NB	65NB	65NB	65NB	65NB	65NB	65NB
BLADE COVER	1000	1150	1325	1445	1595	1700	1900	2100	2300	2500	2600

XHD CENTRE TENSIONED

BELT WIDTH	1350	1500	1600	1800	2000	2200	2400
TRACK LENGTH	1370	1370	1690	1690	2010	2010	2350
No.BLADES	7	7	9	9	11	11	13
BLADE COVER	1155	1155	1485	1485	1815	1815	2145
FRAME LENGTH	2300	2450	2600	2800	3000	3300	3600
STIFFENER LENGTH	-	1600	1800	1950	2150	2400	2600

SPRAYBARS

BELT WIDTH	450	600	750	900	1050	1200	1350	1500	1600	1800	2000	2200	2400
No. NOZZLES	1	1	2	2	3	3	4	5	5	6	6	7	8
SPRAY COVER-DN40	-	-	-	-	-	-	-	-	-	1510	1510	1760	2010
SPRAY COVER-DN25	267	267	517	517	767	767	1017	1267	1267	-	-	-	-
FRAME LENGTH	950	1150	1300	1550	1750	2000	2150	2300	2400	2750	3000	3250	3500
6 BAR (l/min)	5.6	5.6	11.2	11.2	16.8	16.8	22.4	28	28	33.6	33.6	39.2	44.8
10 BAR (l/min)	7.2	7.2	14.4	14.4	21.6	21.6	28.8	36	36	43.2	43.2	50.4	57.6

INLINE PREMIUM SECONDARY CLEANER

BELT WIDTH	450	600	750	900	1050	1200	1350	1500	1600	1800	2000	2200	2400
MAINFRAME LENGTH	1250	1400	1600	1800	1950	2100	2300	2450	2600	2800	3000	3300	3600
CARTRIDGE LENGTH	950	1050	1200	1450	1500	1700	1900	2000	2050	2300	2500	2750	3000
STIFFENER LENGTH	NO STIFFENER REQUIRED									COMPLETE DATASHEET			
No. OF CLEANING BLADES	4	5	6	8	9	10	12	13	14	16	18	20	22
CLEANING BLADE COVERAGE	400	500	600	800	900	1000	1200	1300	1400	1600	1800	2000	2200
END BLADE WIDTH	75	75	75	75	75	75	75	100	100	100	100	100	100

INLINE STANDARD SECONDARY CLEANER

BELT WIDTH	450	600	750	900	1050	1200	1350	1500	1600	1800	2000	2200	2400
FRAME LENGTH	1250	1400	1600	1800	1950	2100	2300	2450	2600	2800	3000	3300	3600
TRACK LENGTH	650	750	900	1100	1200	1300	1500	1700	1800	2000	2200	2400	2600
STIFFENER LENGTH	NO STIFFENER REQUIRED									COMPLETE DATASHEET			
No. OF CLEANING BLADES	4	5	6	8	9	10	12	13	14	16	18	20	22
CLEANING BLADE COVERAGE	400	500	600	800	900	1000	1200	1300	1400	1600	1800	2000	2200
END BLADE WIDTH	75	75	75	75	75	75	75	100	100	100	100	100	100

DIAGONAL PLOUGH

BELT WIDTH	450	600	750	900	1050	1200	1350	1500	1600	1800	2000	2200	2400
M/FRAME LENGTH	640	880	1080	1300	1500	1855	2135	2275	2415	2695	2975	3255	3535
MIN MOUNT FACES	610	775	910	1060	1210	1475	1690	1800	1905	2105	2300	2500	2700
MAX MOUNT FACES	725	930	1075	1225	1375	1700	1900	2000	2090	2290	2485	2685	2880
BLADE LENGTH	725	1000	1155	1410	1575	1830	2110	2250	2455	2735	3015	3295	3575
No. HOLES	5	7	8	10	11	13	15	16	17	19	21	23	25

BRUSH CLEANER

BELT WIDTH	450	600	750	900	1050	1200	1350	1500	1600	1800
No. BRUSHES	4	5	6	8	9	10	12	13	14	16
BRUSH COVERAGE	400	500	600	800	900	1000	1200	1300	1400	1600
MIN MOUNT FACES	660	710	860	1010	1160	1310	1460	1610	1710	1910
MAX MOUNT FACES	710	860	1010	1160	1310	1460	1610	1760	1860	2060

COMPACT BRUSH CLEANER

BELT WIDTH	300	400	450	500	600	650	750	900
BRUSH COVERAGE	270	370	420	470	570	620	720	870
MIN MOUNT FACES	350	450	500	550	650	700	800	950
MAX MOUNT FACES	725	825	875	925	1025	1075	1175	1325

GENERAL NOTES

1. WHERE 1600 BELT CLEANERS SHOW 9(10) BLADES, 9 IS THE DEFAULT UNLESS OTHERWISE STATED
2. WHERE STIFFENERS ARE REQUIRED PLEASE SUPPLY THE RELEVANT DIMENSIONAL DATA
3. XHD & TRAC-MOUNT PRIMARY CLEANERS HAVE STIFFENERS AS INDICATED
4. MANDREL MOUNTS ARE AVAILABLE FOR XHD, TRAC-MOUNT, DURT TRACKER (WITHOUT STIFFENER) & HAWG BONE / DURT HAWG CLEANERS
5. TWIST TENSIONERS ARE NOT AVAILABLE WITH XHD
6. DUAL TENSIONERS ARE USED ON ALL CLEANERS 1500 BELT WIDTH AND OVER (INLINE SECONDARY & COMPACT SECONDARY CLEANERS ALWAYS HAVE DUAL TENSIONERS) USE SAME SETTINGS ON BOTH TENSIONERS
7. TELESCOPING ENDS USED:
   450-1050 BELT / 600 LONG
   1200 - 2400 BELT / 900 LONG

COMPACT DIAGONAL PLOUGH

BELT WIDTH	350	400	450	600	650	750	900
MAINFRAME LENGTH	615	686	756	969	1039	1181	1393
CENTRE FRAME LENGTH	500	560	630	840	910	1070	1280
BLADE LENGTH	540	600	670	880	950	1110	1320

COMPACT PLUS PRIMARY

BELT WIDTH	300	450	600	750	900	1050	1200	1350
No.BLADES	2	3	4	5	6	7	8	10
BLADE COVER	250	375	500	625	750	875	1000	1250
FRAME LENGTH	1100	1250	1400	1600	1800	1950	2100	2300

COMPACT - PRIMARY & SECONDARY

BELT WIDTH	300	400	450	500	600	650	750	900
No. PRIMARY BLADES	1	1	1	1	1	1	1	1
BLADE COVER	250	350	400	450	550	600	700	850
No. SECONDARY BLADES	3	5	5	6	7	8	9	11
BLADE COVER	225	375	375	450	525	600	675	825
FRAME LENGTH	600	800	800	850	1000	1050	1200	1400

F0346	BELT CLEANER TENSIONERS QUICK REFERENCE CHART
DRAWING No.	REFERENCE DRAWINGS

File: C:\Vault Working Folder\DRAWINGS\GENERAL\F_INSTALLATION DRAWINGS\F0300\F0347.dwg, 22/11/2010 9:17:32 AM, gpoodey

JOB No.

ESS CAD

CLIENT:

LOCATION:

REV	REVISIONS	REF DOCS	BY	CHKD BY	APP BY	DATE
D	INLINE END BLADE WIDTHS	EDCR338	GG	GC	CW	17/11/10
C	DIAG PLOW TABLE MOD'D		SD	GG	TT	18/7/08
B	COMPACT - 900 BW ADDED		GG	SD	TT	23/5/07
A	ORIGINAL ISSUE	ARF1617	SD	GC	TT	

ESS ENGINEERING SERVICES & SUPPLIES
CUSTOMER SERVICE No. 1800 074446

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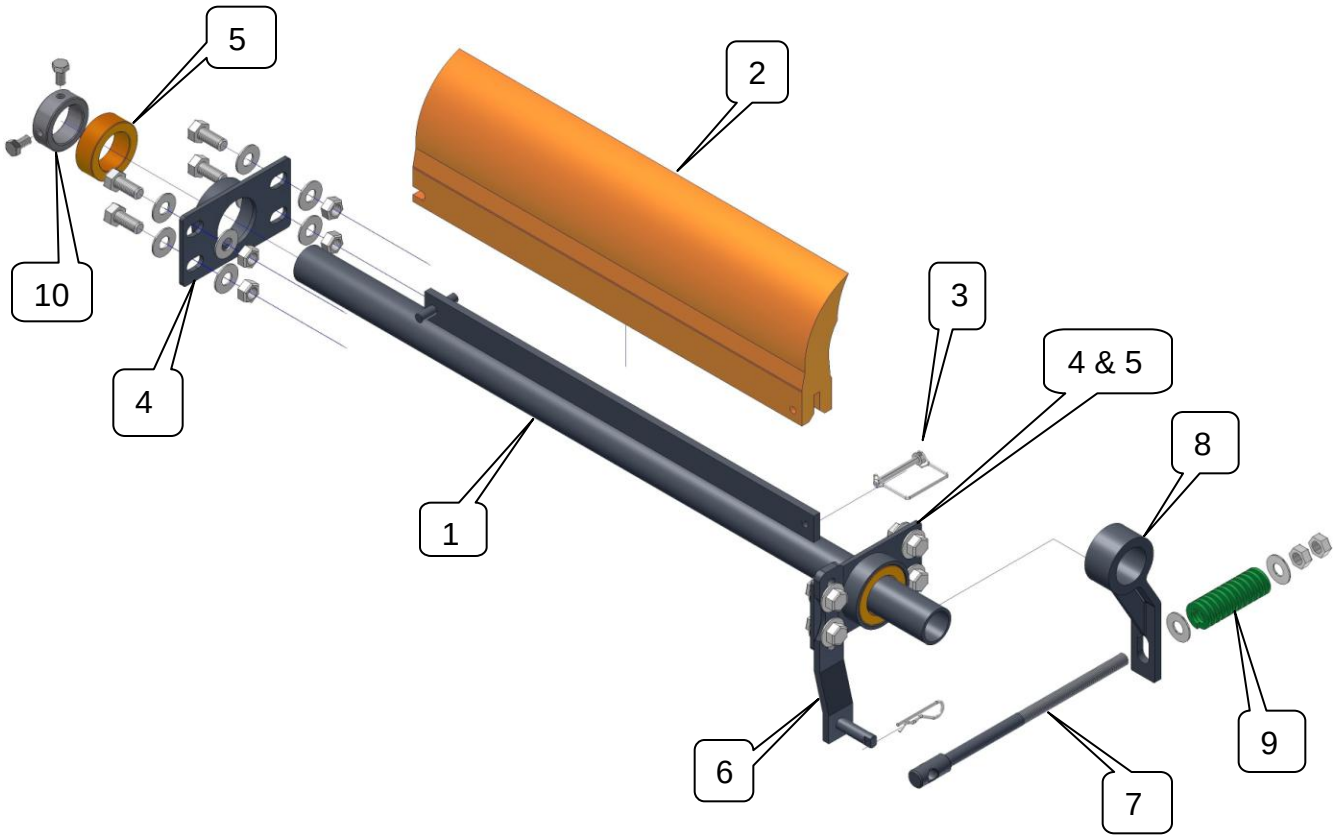
TITLE: ESS BELT CLEANERS QUICK REFERENCE CHART

DRAWN BY: SD	SCALE: NTS	DRAWING No.	REV.
CHKD:GC APPD: TT	DATE: 18/7/06	F0347	D

SECTION 12 – SPARE PARTS



Item	Description	No. Req'd	Part Number
1	Pit Viper Mainframe	1	15330XXX
2	Pit Viper Blade Orange	1	33900XXX
3	Pit Viper Blade Retaining Lock Pin	1	33900001
4	Flex Mount	2	09010057
5	Flex Bush FRAS Urethane	2	09010055FM
6	Spring Tensioner Anchor Plate	1	09010334
7	Spring Tensioner Adjusting Rod c/w Nuts	1	09010331
8	Spring Tensioner Operating Arm	1	09010330
9	Spring Tensioner Spring	1	09010335
10	Lock Collar	1	09010041

Notes :

1. Items 1 and 2 – Part Number XXX denotes belt width in cm. Example: for 750 belt, use 075.
2. Items 1,4,6,7,8,10. Add "S" suffix to part number for stainless steel.
3. Item 5 is available in a number of materials – contact ESS for further details.

FINAL CHECKLIST

Site:_____ Number: _____ Date:_____

Site Equipment No./Location: _____ Site Contact: _____

Completed By: _____ **(Circle Yes or No Below)**

1. **Was equipment to ESS Specification?** _____ **Yes/No**

   Drawing No. Ref:_____ **Attached? Yes/No**

   If No, WHY _____

   _____

   Will this affect performance? Yes/No

   If Yes, WHY _____

   _____

2. **Was this a standard ☐ service ☐ inspection ☐ installation? Yes/No**

   If No, WHY _____

   _____

   _____

3. **Was work carried out as per procedure and JSA? Yes/No**

   If No, WHY _____

   _____

4. **Is equipment fit for commissioning? Yes/No**

   If No, WHY _____

   _____

5. **Was a final inspection carried out while plant was running? Yes/No**

   If No, WHY _____

   _____

6. **Has anything changed from previous service / inspection / installation? Yes/No**

   If Yes, WHAT _____

   _____

7. **Is equipment performance to Client expectations? Yes/No**

   If No, WHY _____

   _____

ESS Signature: _____ **Client Signature:** _____